DOCUMENT RESUME

ED 474 332 CE 084 656

TITLE	HRD Effectiveness and Transfer of Learning. Symposium.
REPORT NO	No-17
PUB DATE	2002-00-00
NOTE	23p.; In: Academy of Human Resource Development (AHRD) Conference Proceedings (Honolulu, Hawaii, February 27-March 3, 2002); see CE 084 635.
PUB TYPE	Opinion Papers (120) -- Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Adult Education; Adult Learning; Definitions; Delivery Systems; Developed Nations; Developing Nations; Educational Research; Foreign Countries; Human Resources; Instructional Design; *Instructional Effectiveness; *Labor Force Development; *On the Job Training; Performance Factors; Postsecondary Education; Program Content; Questionnaires; Research Methodology; Stakeholders; Test Construction; *Transfer of Training; Validity
IDENTIFIERS	Impact Studies; Netherlands; Thailand

ABSTRACT

This document contains three papers from a symposium on human resource development (HRD) effectiveness and transfer of learning. "Factors Affecting Transfer of Training in Thailand" (Siriporn Yamnill, Gary N. McLean) discusses how the Learning Transfer System Inventory was validated in Thailand by administering it to 1,029 employers and analyzing their responses to identify factors affecting transfer of training and compare transfer systems. "Characteristics Expanding HRD Effectiveness" (A.A.M. [Ida] Wognum), Bernard P. Veldkamp, Wendy E. Ankersmit, J. Annechien van de Lagemaat) reports how data from seven surveys were analyzed to determine the relative impact of the following categories of characteristics on HRD programs' effectiveness: setting HRD goals; stakeholder involvement; HRD programs' form; and HRD programs' content field. "Expanding the Transfer of Training Domain of Structured On-the-Job Training" (Chan Lee, Jin Hyuk Kim, Ronald L. Jacobs) proposes that structured on-the-job training can be used in both near transfer of training (training whose content and outcomes related to one work task and whose design is based on specific concepts, procedures, problem solving, and decision making) and far transfer of training (training whose content and outcomes relate to a set of related work tasks and whose design is based on general concepts, broad principles, problem-solving rules, and decision-making rules). All papers include substantial bibliographies. (MN)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 474 332

2002 AHRD Conference

HRD Effectiveness and Transfer of Learning

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Symposium 17

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Jamm II/Wognum Lee

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Honolulu, Hawaii

February 27 - March 3, 2002

BEST COPY AVAILABLE

CE084656

Factors Affecting Transfer of Training in Thailand

Siriporn Yamnill
Gary N. McLean
University of Minnesota

To validate the Learning Transfer System Inventory (LTSI) (Holton et al., 1998) in Thailand, research repeating Holton et al.'s (2000) study was conducted. The LTSI was administrated to 1,029 employees. Exploratory factor analysis and MANOVA were used to identify factors and compare transfer systems respectively. A factor structure almost identical to Holton et al.'s was identified. Perceived content validity was identified as the most important factor. Organization type created the greatest number of differences among variables tested.

Key words: Transfer of training, Learning Transfer System Inventory, Thailand

For more than three decades, organizations in Thailand have focused on training and development as a tool for improving employees' job performance. About 1,439 private and public organizations in Thailand organize training to expand and strengthen the business sector (Tirakanon, 1997). Recently, due to an economic crisis in Thailand, many training and HRD interventions have faced constricted budgets (Na Chiangmai, 1999). Most organizations have continued only those training programs that are really needed and can be expected to increase employees' work performance immediately. As a result, many administrators ask to see the outcomes of training. Evaluating the effectiveness of formal training and return on training investment are critical issues (Na Chiangmai, 1999).

According to Kirkpatrick (1967), the key criterion for evaluating training effectiveness is transfer of training. Transfer of training is defined as the degree to which trainees apply the knowledge, skills, behaviors, and attitudes gained in training to their jobs (Wexley & Latham, 1991). There is consensus that the acquisition of knowledge, skills, behaviors, and attitudes in training is of little value if the new characteristics are not generalized to the job setting or are not maintained over time (Kozlowski & Salas, 1997).

According to Holton, Bates, and Ruona (2000), transfer of training is a critical outcome of HRD. Transfer of training is complex and involves multiple factors and influences (Baldwin & Ford, 1988; Ford & Weisbein, 1997; Holton, Bates, & Leimbach, 1997; Holton, Bates, Ruona & Leimbach, 1998; Noe, 1986; Rouiller & Goldstein, 1993). Tannenbaum and Yukl (1992) suggested that research that defines and accurately measures factors affecting transfer of training is important to help HRD move beyond the question of whether training works to asking why training works. Without controlling for the influence of the transfer system, evaluation results are likely to vary considerably and yield erroneous conclusions about intervention outcomes (Holton, 1996).

Problem Statement

To date, most of the research on training effectiveness in Thailand has focused exclusively on Kirkpatrick's levels 1 (reaction) and 2 (learning) (Tirakanon, 1997). There has been no research identified on transfer of training in Thailand. Sunthornvipat (1983) analyzed the evaluation of training projects in Thailand. She found that more than 80% of the organizations studied used reaction measures to evaluate their programs. Tirakanon (1997) found that 80-90% of organizations that evaluate programs after training emphasized learning and reactions. Some research (Chue, 1993; Pahuchun, 1996; Somboonsut, 1989; Thongtip, 1998) has followed up on the application of knowledge and job performance, but studies of the factors that positively influence transfer were not identified. Without understanding these factors, Thai HRD professionals will continue to understand evaluation of training narrowly and continue to make decisions based on reaction and learning level data only. According to Holton et al. (2000), organizations wishing to enhance return on investment from training investments must understand all factors that affect transfer of training and then intervene to eliminate factors inhibiting transfer.

A well-validated and reasonably comprehensive set of scales to measure factors in a transfer system will be a key element in improving the organizational transfer system. Holton et al. (2000) developed the Learning Transfer System Inventory (LTSI) to assess sixteen factors that they suggested influence transfer. To date, the LTSI has mostly been used as a diagnostic tool—participants complete it at the end of training interventions, and results are used to assess the quality of the transfer climate and to indicate where changes might be made. According to Holton et al. (2000), the LTSI was constructed from sound theory and based on a very large and extremely diverse sample. It works well across many types of training and organizations. However, Holton et al. (2000) suggested that the

Copyright © 2002 Siriporn Yamnill and Gary N. McLean

LTSI needs to be validated in different cultures. Training evaluation in Thailand has focused mostly on influences within the training context but has ignored other influences within the firm that affect performance outcomes from learning. In order to move beyond the current framework, an accurate diagnostic tool is needed to assess the transfer of training factors that affect transfer of training in Thailand.

Purposes and Research Questions

This study identified a set of factors that affect transfer of training in Thailand by replicating Holton et al.'s (2000) study. The transfer system found in the Thai culture was examined across organization and training types, as well as participant demographics. Following are the study's research questions:

1. What factors in Holton et al.'s (2000) study are identified using the LTSI translated into Thai?
2. Are there differences in Thai transfer system characteristics among different organizational types: government, private, and state enterprise?
3. Are there differences in Thai transfer system characteristics among different training types: professional, general, management/leadership, and computer?
4. Are there differences in Thai transfer system characteristics among demographics of participants: gender, age, education, and work experiences?

Methodology

The methods used to validate the LTSI (Holton & Bates, 1998) in Thailand through replication are described in this section, including population and samples, instrument, data collection process, and data analyses used.

Population

The population was employees in 552 Thai organizations (119 government organizations under the Office of Civil Service Commission, 51 state enterprises, and 382 private organizations in the Stock Exchange of Thailand in 2000).

Samples

To ensure organizational diversity, proportionate random sampling was used to select participated organizations. From the 30 selected organizations, 1,256 employees who had completed a training program within the last two months were given instruments to complete. Eighty-two percent (1,029) participated.

Instrument

The LTSI (Holton & Bates, 1998) has 89 items: 68 items from the second version of the LTSI and 21 additional items not yet tested. The 89 items measure 16 factors affecting transfer of training. The LTSI uses a scale of 1-5, 1 being "strongly disagree" and 5 being "strongly agree." The items represent two construct domains: 45 items measure 11 constructs of factors affecting the training program attended and 23 items measure five constructs that are not program specific but represent general factors that may influence any training program. Cross-translation was performed and revisions made to ensure that the Thai version was equivalent to the English LTSI original.

Data Collection

The Thai LTSI was administered at one of two times. When administered at the end of a program, the person who organized the training program distributed questionnaires to trainees during the final period and collected completed instruments. If the LTSI was administered after training, the head of the HRD or training department selected two training programs that had finished within the past sixty days. The LTSI was mailed directly to trainees, and completed LTSI instruments were returned to the HRD or training department within three weeks.

Data Analysis

Exploratory factor analysis was used to compare factors affecting transfer of training when using the LTSI. The measure of sampling adequacy (MSA) was used to determine the appropriateness of the use of factor analysis. No

inadequate MSA values were found. Multivariate analysis of variance (MANOVA) was used to explore differences in Thai transfer system characteristics. Prior to these analyses, the data were examined for adherence to MANOVA assumptions. According to Hair, Anderson, Tatham, and Black (1998), if the ratio of the largest to the smallest group differs by more than 1.5, a test for equality of variance (the Box test) is needed. However, the Box test is not a robust test; it is very sensitive due to many problems (Harris, 1985). In this study, MANOVA was run whenever the Box test was statistically significant, and the results of the MANOVA were examined carefully.

Results

Results included descriptive demographic data and the results of the analyses related to the four research questions.

Demographic Data

The 1,029 respondents were almost equally distributed between men and women. Most were between 31 and 40 years old (44.0%) and had graduated with a bachelor's degree (64.9%). Average work experience was 12.64 years.

Factor Constructs

Exploratory factor analysis was used to explore the factors that emerged from using the Thai LTSI. The results of the factor analysis of both the 68- and 89-item forms are presented, along with a comparison with the results in the U.S. The findings of specific training program scales and training in general scales are presented separately. Items retained are those with factor loadings greater than .35; all factors had eigenvalues of 1 or more.

68-Item Form. Thirty-eight items were retained in the *specific training program* scales, assessing 11 factors. The same number of factors were found in Holton et al. (2000). In addition, most of the items loaded on the same factors. For example, four of the eleven factors contained the same items. The other seven factors were nearly identical. Only two items (#1, #17) loaded on different factors. Thus, the factors in this study were labeled the same as those in Holton et al. (2000). Six of the eleven factors exceeded the minimum reliability of at least .70. Overall, reliabilities ranged from .58-.85, with an average alpha of .73, and the average loading on the major factor was .61 with only .01 average loading on non-major factors.

As for the *training in general* scales, five eigenvalues of 1 or more, accounting for 53.1% of the variance, emerged from the factor analysis of the 23 items. These five factors corresponded to the factors in Holton et al. (2000). Twenty-one items were retained. Three of five factors were identical to the factors found in Holton et al. (2000), with only one item loaded on a different factor. The three factors that were identical to factors found in Holton et al. (2000) were resistance/openness to change, performance self-efficacy, and feedback/performance coaching. Overall, reliabilities were above the minimum level (.70), except for performance-outcome expectations and feedback/performance-coaching factors. Reliabilities ranged from .61-.81 with the average alpha of .72. The average loading on the major factor was .58 with a .01 average loading on non-major factors.

In conclusion, upon determining the eigenvalues of 1.00 or more, sixteen factors were extracted. Seven factors were identical to factors found in Holton et al. (2000). Only three items loaded on different factors. Ultimately, using a cut off for factor loadings of .35, 59 items were retained in the instrument, assessing 16 factors.

89-Item Form. The *specific training program* scale produced 11 factors, explaining 55.19% of the variance. Of the 63 items in this part of the instrument, 52 items loaded .35 or higher on these eleven factors. Eleven items were dropped because of weak factor loading. Most items loaded on each factor corresponded to the items loaded on the factors found in Holton et al. (2000). Only 5 items were loaded on different factors. Most factors had acceptable reliability. Only the personal capacity for transfer factor had low reliability (α=.24). The average loading on the major factor was .60, with only a .01 average loading on non-major factors.

For the *training in general* scales, five factors emerged, explaining 53.65% of the variance. Of the 26 items on the instrument, 21 loaded .35 or higher on these five factors. The five factors corresponded to the factors found in Holton et al. (2000). Only one item loaded on a different factor. Five items were dropped because of a factor loading of less than .35. Most factors had acceptable reliability. Overall, reliabilities ranged from .63-.83. Only performance outcomes expectation was below .70. The average loading on the major factor was .64, with only a .012 average loading on non-major factors.

In conclusion, sixteen factors were extracted; five were identical to factors found in the LTSI (Holton and Bates, 1998). Only six items had substantial loadings on different factors. The additional items were loaded on the

expected factors. Ultimately, using a cut off for factor loadings of .35, 73 items were retained in the instrument, assessing 16 factors.

Organizational Type Comparisons

MANOVA was used to determine if organizational type affected the results on the Thai LTSI. Government, state enterprise, and private organizations included 366, 192, and 471 respondents, respectively. The ratio of the largest group to the smallest was 2.45:1.

The MANOVA analysis showed strong statistical significance (Wilk's lambda = .858, F = 4.918) at the .00 level on all criteria, indicating that the transfer system characteristics differed across organizational types. Then, a Univariate ANOVA was used to show the differences across organizational type. The results showed that eleven of the sixteen factors were significantly different across organizational type.

Post hoc comparisons were examined for differences among pairs of organizational types. Government and state enterprise organization comparison revealed that only four of the sixteen paired comparisons showed significant differences. The results showed that the learner readiness, personal outcomes-positive, opportunity to use learning, and transfer effort-performance expectation factors in state enterprise organizations were significantly higher than those in government organizations. When comparing government and private organizations, ten of the sixteen paired comparisons showed a significant difference. The personal outcomes-positive, personal outcomes-negative, peer support, supervisor support, opportunity to use learning, transfer effort performance expectation, performance-outcomes expectations, and performance self-efficacy factors in private organizations were significantly higher than those in governmentorganizations. In contrast, supervisor sanctions and resistance/openness to change factors in government organizations were significantly higher than those in private organizations.

When comparing state enterprises and private organizations, only four of sixteen paired comparisons showed significant differences. Personal outcomes-positive, personal outcomes-negative, and supervisor support factors in private organizations were significantly higher than those in state enterprise. The learner readiness factor in state enterprises was significant higher, than in private enterprises.

Overall, the results showed that the highest number of factor differences across organizational type was between government and private organizations.

Training Type Comparisons

Professional, general, management/leadership, and computer training included 325 (31.6%), 403 (39.2%), 195 (19.0%), and 106 (10.3%) respondents, respectively. The ratio of the largest group of trainees to the smallest was 3.8:1. MANOVA analysis revealed strongly significant differences (Wilk's Lamda = .89, F = 2.51) at the .00 level across training type, indicating that the transfer system was significantly different across training types. In the between subject ANOVA, eight of sixteen factors were significantly different across the training types.

The post hoc comparisons showed that respondents who received management/leadership training rated personal outcomes-positive, training design, opportunity to use learning, and performance outcomes-expectations significantly higher than those receiving general training or professional training. By contrast, respondents who received general training rated perceived content validity significant higher than management/leadership training and rated supervisor support higher than those who participated in computer training. In addition, respondents who received computer training rated learner readiness significantly higher than did those pursuing management/leadership training.

Demographic Group Comparisons

MANOVA was used to analyze the differences among demographic groups.

When *gender* was used as the independent variable, male respondents numbered 496 (48.2 %), with female respondents, 533 (51.8%). The ratio of women to men was 1.07:1. MANOVA analysis showed statistically significant differences (Walk's lamda = .97, F = 2.09, p = .007) on all criteria, indicating that transfer system characteristics differed between male and female respondents. The F-test showed that only two of sixteen factors were significantly different; however. males rated personal outcomes-positive and transfer effort performance expectation higher than did females.

With *age* as the variable, the ratio of the largest group to the smallest group was 1.91:1. MANOVA analysis showed strongly significant differences (Wilk's lamda = .93, F = 2.31) at the .00 level across age ranges. In between subject ANOVA, three of sixteen factors were significantly different according to age: personal outcomes-positive,

supervisor sanctions, and feedback/performance coaching. The post hoc comparisons showed that respondents aged 30 years or less rated personal outcomes-positive and feedback/performance coaching higher than did those aged 31-40 years old and those more than 40 years old. In contrast, respondents aged 40 years or more rated supervisor sanctions higher than their younger cohorts.

For *education*, f the total respondents, 158 (15.7%) had less than a bachelor's degree, 653 (64.8%) had at least a bachelor's degree, and 197 (19.5%) had education levels beyond a bachelor's degree. The ratio of the largest group to the smallest group was 4.13:1. MANOVA analysis showed strongly significant differences (Wilk's lamda = .88, F = 4.17) at the .00 level across the educational levels. In between subject ANOVA, seven of sixteen factors were significantly different across educational levels. The post hoc comparison showed significant differences in those seven factors. Respondents with less than a bachelor's degree rated personal outcomes-positive, personal outcomes-negative, supervisor support, perceived content validity, performance outcomes expectation, and feedback/performance coaching higher than did respondents with higher levels of education.

For *work experience*, 158 (15.7%) respondents had fewer than 5 years of experience, 225 (22.3%) 5-9.99 years, 280 (27.8%) 10-15 years, and 345 (34.2%) had more than 15 years. The ratio of the largest group to the smallest group was 2.18:1. MANOVA analysis showed strongly significant differences (Wilk's lamda = .90, F = 2.17) at the .00 level across the number of years of work experience. In between group ANOVA, four of sixteen factors were significantly different. The post hoc comparisons showed significant differences in three factors. Respondents who have worked fewer than 5 years rated personal outcomes-positive higher than those who have more than 15 years on the job, while respondents who have worked 10-15 years rated personal outcomes-positive higher than who have 5-9.99 years of experience. In addition, respondents who have worked more than 15 years rated supervisor sanctions higher than those who have worked 5-9.99 years and those with less than 5 years of experience. Finally, the least experienced rated feedback/performance coaching higher than those who have worked 10-15 years and those with more than 15 years of experience.

Conclusions

The following conclusions are drawn from this study.

1. Sixteen transfer of training factors emerged when the LTSI version 2 (Holton and Bates, 1998) was applied in a Thai sample. Since these 16 factors corresponded to the transfer system , the transfer system developed by Holton et al. (1998) is valid in Thailand.
2. Perceived content validity is the most important factor to explain transfer of training in Thailand. This result also corresponded to Holton et al. (2000).
3. The Thai transfer system most varies depending on organizational type, especially between government and private organizations. This result may be explained by differences in organizational characteristics and culture between these two kinds of organization.
4. The validated Thai LTSI consists of 73 items, measuring 16 factors affecting transfer of training in Thailand, divided into two sections. The first contains 52 items measuring 11 factors in specific training program scales, and another 21 items measure five factors in training in general scales. However, this instrument has some weaknesses, such as a disproportionate number of items across factors and low internal consistency reliability in some factors. Therefore, this instrument needs revision and additional research.

Recommendations for Practice

The following recommendations for practice are made based on the findings and conclusions of this study.

1. Because perceived content validity is the most important factor that affects transfer of training, learners should be assigned as full stakeholders in the design and implementation of training. Learners may be responsible for identifying training objectives, assessing their training needs and participating in developing the training curriculum. The relevance of knowledge, skills, and attitudes of learners to training is significant in determining the training transfer.
2. Because transfer systems vary, particularly depending on the types of organization, HRD professionals in organizations need to diagnose their transfer system. Then, different interventions might be needed for different organizations to enhance transfer of training.
3. According to Holton et al. (2000), the LTSI can be used as a diagnostic tool. In addition, practitioners can use it in different ways, such as to assess potential transfer factor problems prior to conducting major learning interventions, to incorporate evaluation of transfer of the learning system as part of regular employee

assessment, and to conduct needs assessment for training programs to provide skills to supervisors and trainers that will aid transfer.

Recommendations for Research

Future research is suggested as follows.

1. Continued research to test the Thai transfer system found in this study should be done by using confirmatory factor analysis.
2. A qualitative interview process to uncover further factors of transfer of training in Thailand should be initiated. The richness of qualitative research is enhanced through the collection of additional data and subsequent analysis.
3. Research on related effects of transfer of training factors on work performance after attending training should be done to see the relationship between these two factors.
4. This study focused on the government organizations under the control of the Office of Civil Service Commission only. If the subjects were from other government organizations that are not controlled by the OCSC, such as the military, judicial, or police organizations that different results might occur.

References

Baldwin, T. T., & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology, 41*(2), 63-105.

Chue, Y. (1993). *Follow-up of the computer training in application efficiency of provincial agricultural extension officers*. Unpublished master's thesis, Kasetsang University, Bangkok, Thailand.

Ford, J. K., & Weissbein, D. A. (1997). Transfer of training: An updated review and analysis. *Performance Improvement Quarterly, 10*(2), 22-41.

Hair, J. F., Anderson, R. E., Tatham R. L., & Black, W. C. (1998). *Multivariate data analysis*.(5th ed.). Upper Saddle River, NJ: Prentice Hall.

Harris, R. J. (1985). *A primer of multivariate statistics* (2th ed.). Orlando, FL: Academic Press.

Holton, E. F., III. (1996). The flawed four-level evaluation model. *Human Resource Development Quarterly, 7*(1), 5-25.

Holton, E. F., III and Bates, R. A. (1998). *Learning Transfer System Inventory (LTSI)*. Unpublished manuscript.

Holton, E. F., III, Bates, R. A., & Leimbach, M. (1997). Development and validation of a of a generalized learning transfer system questionnaire: A preliminary report. In R. Torraco (Ed.), *Proceedings of the 1997 Academy of Human Resource Development annual conference*. Baton Rouge, LA: Academy of Human Resource Development.

Holton, E. F., III, Bates, R. A., & Ruona, W. E. A. (2000). Development of a generalized learning transfer system inventory. *Human Resource Development Quarterly, 11*(4), 333-359.

Holton, E. F., III, Bates, R. A., Ruona, W. E. A., & Leimbach, M. (1998). Development and validation of a generalized learning transfer climate questionnaire: Final report. In R. J. Torraco (Ed.) *Academy of Human Resource Development 1998 conference proceedings*, (pp. 482-489). Baton Rouge, LA: Academy of Human Resource Development.

Kirkpatrick, D. L. (1967). Evaluation of training. In R.L. Craig & L. R. Bittel (Eds.), *Training and development handbook* (pp. 87-112) New York: McGraw-Hill.

Kozlowski, S. W. J., & Salas, E. (1997). A multilevel organizational systems approach for the implementation and transfer of training. In J. K. Ford (Ed.), *Improving training effectiveness in work organizations* (pp. 247-287). Mahwah, NJ: Lawrance Erlbaum Associates.

Na Chiangmai, C. (1999, November). (Personal communication)

Noe, R. A. (1986). Trainee attributes and attitudes: Neglected influences on training effectiveness. *Academy of Management Review, 11*(4), 736-749.

Pahuchun, M. (1996). *Evaluating the "Introduction training program" of DHL International Thailand Ltd.* Unpublished master's thesis, Thummasat University, Bangkok, Thailand.

Rouiller, J. Z., & Goldstein, I. L. (1993). The relationship between organizational transfer climate and positive transfer of training. *Human Resource Development Quarterly, 4*(2), 377 390.

Somboonsut, N. (1989). *A follow-up study of application of knowledge in job performance of the participants who attended the executive training course organized by the Institute of Government and Local Administration*, Unpublished master's thesis, Kasatsang University, Bangkok, Thailand.

Sunthornvipat, P. (1983). *An analysis of the evaluation of training projects in Thailand*. Unpublished master's thesis, Chulalongkorn University, Bangkok, Thailand.

Tannenbaum, S. I., & Yukl, G. A. (1992). Training and development in work organizations. *Annual Review of Psychology, 43*, 399-441.

Thongtip, C. (1998). *Effects of a salesmanship course on necessary selling knowledge and working behavior at Bata Shoes of Thailand Public Company Limited*, Unpublished master's thesis, Kasatsang University, Bangkok, Thailand.

Tirakanon, A. (1997). *The training system of private organizations in the metropolitan area of Bangkok*, Unpublished master's thesis , Thummasat University, Bangkok, Thailand.

Wexley, K. R., & Latham, G. P.(1991). *Developing and training human resources in organizations*, New York: Harper Collins.

Characteristics Explaining HRD Effectiveness

A.A.M. (Ida) Wognum
Bernard P. Veldkamp
Wendy E. Ankersmit
J. Annechien van de Lagemaat
University of Twente, The Netherlands

Data from seven surveys were analyzed to identify characteristics that have an impact on the effectiveness of HRD programs. Results indicate, that setting specific HRD objectives promotes HRD effectiveness more than the setting of general objectives, HRD people are more positive about HRD effectiveness than managers and personnel officers, in-company programs are less effective than individual ones, and that programs in the field of languages are perceived as more effective that programs in the field of management, communication, and commerce.

Keywords: Improving Training Results, Enhancing HRD Effectiveness

Managers are increasingly being made responsible for the performance results of their work organization, unit or department. One of the means of improving performance is to develop the competencies of their employees by means of training and other learning interventions. They will invest in such interventions - further referred to as training, or Human Resource Development (HRD) programs - if these have added value for their company; and work organizations are still making considerable investments in training (Van Buren, 2001). In this way they are indicating that they expect training to produce positive effects on the achievements not only of individual employees but also of separate departments and the entire organization. Managers, however, will certainly take a critical look at the results of training and will only be willing to opt for those training programs that are expected to produce positive effects. In other words, HRD will be seen more and more as an investment that should produce results (Wognum, 1994). Research into the effectiveness of HRD has, as a result, been given a significant impetus, certainly after it was estimated in literature that only between 10 and 20 per cent of the capital invested in HRD and learning interventions would lead to a lasting improvement in performance (e.g. Broad, 1997).

A major part of training and HRD interventions is bought in from outside training companies. These organizations provide training programs from which the purchasing companies expect positive effects. Training companies therefore aim to provide programs of a high quality. The '*Vereniging van Trainings- en Opleidingsinstituten in Nederland*' [Association of Training and Education Institutes in the Netherlands] (Vetron) is an association of established training companies that considers quality to be of paramount importance. In order to be able to monitor this quality, Vetron asked the Faculty of Educational Science and Technology of the University of Twente to conduct an evaluation on its behalf. This involves a survey being carried out of the quality of the training companies that are affiliated to Vetron by means of a random sample of the client base of the companies concerned. Seven surveys were carried out, during the period 1993 up to and including 1999.

Research Question

In the above section it is indicated that Vetron has had seven surveys conducted of the quality of the HRD programs provided by its companies. The study presented in this paper relates to a further analysis of the data from all seven surveys. On the basis of the results, Vetron aims to increase the effects and thus the effectiveness of the training they provide, by improving characteristics that have an impact on the effects of HRD programs. This implies, that Vetron would like to gain an insight into characteristics explaining HRD effectiveness. The research question, therefore, runs as follows: Which characteristics explain the effectiveness of HRD programs carried out by Vetron training companies?

Conceptual Framework

The above stated research question elaborates on research that was carried out in previous years by the University of Twente, Faculty of Educational Science and Technology, Department of Educational Organization and Management

Copyright © 2002 A.A.M. Wognum, B. P. Veldkamp, W. E. Ankersmit, and J. A. van de Lagemaat

BEST COPY AVAILABLE

(Wognum, 1999) and fits within the performance paradigm of HRD. According to Weinberger (1998), the performance paradigm of HRD holds that the purpose of HRD is to advance the mission of the organizational system. HRD efforts are intended to improve the capabilities of individuals working in the organization and enhance the organizational systems in which they perform their work. The primary outcome of HRD in this context is not just learning, but also performance at various levels (Holton, 2000). Kaplan and Norton (1996) suggest two categories of performance measures: the so-called drivers and outcomes. Outcomes measure effectiveness relative to core outputs of the system, sub-system, process or individual, whereas drivers measure elements of performance that are expected to sustain or increase system, sub-system, process, or individual ability and capacity to be unique for particular performance systems (Holton, 2000). Together, these drivers and outcomes describe the cause and effect relationships in organizations (Kaplan & Norton, 1996), which implies that drivers should predict future outcomes.

This theory fits well into the theory of HRD effectiveness, where HRD effectiveness is conceived as the extent to which HRD goals and objectives are achieved. (Wognum, 1999). This implies that, to define the level of effectiveness, HRD effects can be measured at three output levels (Holton, 2000; Wognum & Lam, 2000): the learning level (effects on knowledge, skills and attitudes), behavior level (effects on job behavior of individual employees) and results level (effect on the performance results of groups, departments or the company). The HRD effectiveness theory also points to a means-goals ordering that distinguishes between the ultimate criteria and the supportive, effectiveness-enhancing criteria. HRD effects can then be seen as ultimate criteria of HRD effectiveness, like Kaplan and Norton's output measures. Criteria such as the HRD process itself are seen as effectiveness-enhancing criteria (Scheerens & Bosker, 1997; Wognum, 1999), just like Kaplan and Norton's performance drivers. They explain, to some extent, HRD effectiveness. Gaining insight into these criteria is necessary, as a means of interpreting the effects of HRD.

Based on the above stated insights, Wognum (1999) identified the following characteristics, explaining HRD effectiveness.

Setting HRD Goals. In organizational effectiveness thinking, goals can be seen as the major defining factors of the effectiveness concept itself (Scheerens & Bosker, 1997). HRD goals will be developed during a strategic planning or strategic HRD alignment process (Wognum & Mulder, 1999). The word 'strategic' emphasizes the company perspectives and makes the link between HRD and organizational goals and objectives. Strategic alignment concerns a dynamic and interactive process in which HRD goals and objectives are formulated as part of an ongoing future company policy. This relates to the learning and development of individuals and groups of employees for the benefit of both the company and themselves (e.g. Garavan, Costine and Heraty, 1995). In much of the literature, it is assumed that the process of setting general goals and specific objectives for the organization's HRD programs is important to enhance HRD effectiveness. Wognum found in her study on strategic HRD alignment that this process does indeed have a positive effect on perceived HRD effectiveness (Wognum, 1999). If strategic planning resulted in the formulation of more specific objectives, the impact on perceived effectiveness would be even higher than in the case of general goals. It would be interesting to investigate whether setting or not setting goals for HRD projects that have been carried out by Vetron companies has an influence on HRD effectiveness. In the process it would be important to examine whether it is the setting of specific goals that promotes HRD effectiveness more than the setting of general goals.

Involvement of Stakeholders. Strategic HRD alignment refers to the interrelationship between HRD representatives and relevant company employees at strategic, tactical and operational levels of the organization, the so-called HRD stakeholders. Each of these stakeholders or groups of stakeholders aims at particular effects with HRD interventions. Senior managers, for example, will put the functioning of the work organization first, whereas HRD officers are far more focused on the learning goals that the participants should have reached by the end of the HRD activity (Wognum, 1994). This stakeholder perspective can have an influence on the assessment of the HRD effectiveness realized. Earlier research results showed that stakeholder involvement in the strategic alignment process has a positive impact on perceived HRD effectiveness; supervising managers and HRD officers, however, perceive HRD effectiveness significantly higher than HRD participants do (Wognum & Lam, 2000). It is important therefore to investigate to what extent the position of stakeholders in the Strategic alignment process (e.g. training designer, participant, consultant) and the function they hold (e.g. director, divisional manager, HRD coordinator) makes a difference to actual or perceived HRD effectiveness.

Form of HRD Programs. The form of an HRD program is expected to influence HRD effectiveness (Wognum, 2001a). Depending on the kinds of organizational problems involved, a specific HRD program can be tailored or

customized for a specific company, or a standard or other 'off-the-shelf' program, suitable for any company or problem situation can be provided. The former program is mostly offered as a so-called in-company program; the latter is an individual program, open to employees from different companies. The study by Wognum (2001a) revealed that the perceived effectiveness of tailor-made programs was less than that of other program forms. This result was not expected. In-company programs were expected to be more effective than standard programs, because they are tailored to the specific situation of the company where the participants work. It would therefore be interesting to examine whether in-company programs, such as those delivered by Vetron companies, are more effective than individual, more standardized programs in which employees from different companies can participate.

Content Field of HRD Programs. All kinds of environmental forces affect the company, such as demographic, social, economic, ecological, technological, and cultural. Some of these forces have a direct or indirect impact on the company and its HRD function. The ever-increasing trend towards automation, robotics, and other advanced computer applications, for example, has resulted in technological modifications and changes within companies. These changes impel companies to train and develop their employees (Pettigrew, as cited in Garavan, 1991). The HRD function is obliged to deliver HRD programs that provide these workers with the required competencies. Environmental forces thus serve as the starting point for HRD, determining to a certain extent the content field of HRD programs. This 'content field' is also seen as a feature that will have an impact on HRD effectiveness. Automation programs, for instance, proved to be significantly more effective than social skills programs (Wognum, 1999). One possible explanation for this was the different nature of the knowledge and skills in each of the two programs mentioned. It would also be interesting to examine whether differences in HRD effectiveness for different content fields can be observed in the HRD activities carried out by Vetron companies.

Method

Sample. To investigate the research question and, more specifically, the influence of the characteristics identified in the previous section on HRD effectiveness, a data file was used containing data from more than 3,700 questionnaires that were completed in the period from 1993 up to and including 1999 in the context of the evaluation commissioned by Vetron. The data came from a random sample of the client base of - on average - forty training companies that are affiliated to the Vetron. These Vetron companies satisfy a number of requirements relating to professional competence, continuity, quality and method of working. A questionnaire was sent to this random sample, more than 6 months after the HRD activity had been completed. On average, the response percentage was 35%. The main reason for non-response was the fact that respondents were no longer in the employ of the organization involved, due to high turnover rates in the companies.

Data Collection. A questionnaire, which had been specially developed for the evaluation project commissioned by Vetron (Mulder, 2000), was used for gathering the data. This questionnaire was used to determine the quality of the performance of the HRD assignments by the commercial Vetron companies. The questionnaire contains questions about the respondent, about characteristics of the HRD assignment, about the setting of objectives, about the division of responsibilities, about the attribution of the results to the training company and, finally, questions about making agreements and adhering to these (Mulder, 2000). The questionnaire measures both characteristics that have a direct impact on HRD effectiveness and characteristics that could possibly be used as explanatory variables.

Measurement of HRD Effectiveness. The effectiveness of an HRD program is often not immediately measurable, which is why in this study the indicator developed in the context of the Vetron evaluation was used to measure HRD effectiveness (Mulder, van Ginkel & Nijhof, 1994). This Aggregated Impact Indicator (AII) is calculated from the total satisfaction about the assignment, the realization of expectations, the adjusted effect score, the making of agreements and the extent to which these are adhered to, and satisfaction with the implementation of the program. The adjusted effect score is calculated from the extent to which the objectives of the HRD assignment have been realized. In the process, adjustments are made to reflect the importance of the objectives, the extent to which the training company was responsible for achieving these objectives and the extent to which the respondent attributes the attainment of the objectives to the training company. A weighting factor was awarded to each of the characteristics of the effectiveness indicator, based on the results of a Lisrel analysis (Mulder, s.a.). The reliability and validity of this measure was tested by Mulder c.s. as sufficient (1994). Finally, we would like to remark that the AII does not thus measure actual HRD effectiveness but its effectiveness as perceived by the respondents.

BEST COPY AVAILABLE

One of the characteristics by which the AII is calculated is the realization of expectations. Approximately a third of the respondents had not completed this question. There are different ways of dealing with missing values. Firstly, the decision can be made to use only complete cases, which means that the data from incomplete cases are not taken into consideration. Secondly, it can be decided to use the incomplete cases, and to complete them by imputation, meaning that a particular value is filled out instead of the missing values. The usual value for this is the random average (Little & Rubin, 1987). In this survey too, in order to be able to use the data from those respondents who had not stated to what degree their expectations had been realized, the average score for the realization of expectations was calculated and entered.

Predictive Variables. In the questionnaire for the evaluation commissioned by Vetron, several questions were also included relating to specific characteristics that have an influence on HRD effectiveness; the so-called predictive variables . This study examines whether a number of these variables can explain the differences in the AII scores of the participants. To this end it will study whether there are significant differences between groups of participants when one of these variables is conditioned. On the basis of what is described in the 'conceptual framework' section, the impact of the following factors on the AII score is examined:

Setting Training Goals. The study examines whether the setting or not setting of objectives for the HRD assignments has an impact on HRD effectiveness. The expectation is that setting objectives will have a positive impact on HRD effectiveness. The setting of specific objectives is expected to promote HRD effectiveness more than the setting of general objectives.

Involvement of Stakeholders. Another factor that will be examined in the study is the involvement of stakeholders in the HRD assignment. The position of respondents and the functions that they hold are expected to make a difference as regards actual or perceived HRD effectiveness. The questionnaire identifies the following positions: contractor, purchaser, adviser, co-developer, internal organizer/coordinator, participant, and the residual category 'other'. The respondent has the opportunity to indicate more than one position. As far as the function of the respondents is concerned, ten different categories of function are mentioned in the questionnaire, namely: director/works manager, line/departmental /divisional manager, head of personnel (sector/division), personnel officer, head of the HRD department, HRD officer, HRD coordinator within the HRD department, teacher/instructor/trainer, internal adviser, and external adviser. If the function of the respondent does not come under any of these categories, the respondent could fill out his function in the residual category 'other'.

Form of HRD Programs. In this study a distinction is made between in-company programs and individual programs. In-company programs are those that are specially made for a particular company, in which only employees from that company participate. In the case of an individual program, individual employees from different companies take part. The expectation is that in-company programs will be more effective, because they are tailored to the specific situation of the company where the participant works.

Content Field of HRD Programs. The field to which the program relates makes a difference to HRD effectiveness (Wognum, 1999). The questionnaire identifies ten different HRD fields, namely: languages, management, communication, commerce, employee participation, marketing, technology, automation, HRD theory, and other fields. It is thus expected that there will be a difference in HRD effectiveness between these fields.

Preparation of the Data. Before the analyses were conducted, the data file was adjusted on a number of points in order to be able to answer the research question. In the case of the question about the function of the respondent, it emerged that many people had indicated in the category 'other' that they were a member of the works council. For this reason, a separate function category, 'member of the works council' was added. Something similar occurred with the question about the content field of HRD. There proved to be many programs with the combination of management and communication; the combination of communication and commerce also occurred frequently. For this reason these combinations were added as extra categories. Based on the data received about the position of stakeholders, the respondents were divided into four groups according to the stage in which they had been involved in the HRD assignment. The first group consists of respondents who were only involved in the preliminary stages of the program: contractors, purchasers and advisers. The second group compris es respondents who were only involved in the actual implementation of the HRD assignment. This includes co-developers, internal organizers/coordinators and participants. The third group consists of respondents who were involved in both the preliminary stages and the actual implementation. The fourth group is made up of the remaining respondents, of whom it is not known in which stage of the HRD assignment they were involved. Phillips (1997) states that those people who were closely involved

in the implementation of the program are inclined to attribute all the changes or improvements in the participant's behavior to the program itself. People who are further removed from this are also able in their assessment of the program to take into consideration other factors that influence these changes or improvements. On the basis of this, those who were involved only in the actual implementation of the HRD assignment are expected to give a more positive assessment of HRD effectiveness than the rest.

Data Analysis. The data were analyzed with SPSS. The Independent Samples T-test was used to establish the difference between individual and in-company programs and the difference between setting or not setting goals in advance.

A One-way ANOVA was used to see if there was a difference between those who were only involved in the preliminary stages, those who were involved in both the preliminary stages and the actual implementation of the HRD assignment, those who were only involved in the actual implementation of the HRD assignment, and those of whom it is not known in which part of the HRD process they were involved. This also applies to the difference between the function of the respondents, the difference between the fields of HRD and the difference in the extent to which goals were set.

If significant differences between the groups were found in the analysis of variance, a Post Hoc analysis was conducted using the Bonferroni procedure to see which groups differed significantly from the others. This procedure compares the average of each group with every other group by means of a T-test.

All the analyses were conducted with a p-value of .05.

Results

The results of this study show which of the characteristics impact on the All-score of the participants.

Setting HRD Goals. The All-scores of the programs that set HRD goals are higher (M = 65.4, SD = 12.8) than the All-scores of programs for which no objectives were set in advance (M = 62.2, SD = 14.0). The Independent Samples T-test indicates that this difference is significant, $t(2742) = -3.01$, $p < .003$.

Also investigated was whether the setting of general or more specific objectives has an impact on the All-score. The results of the One-way ANOVA show that there is a significant difference, $F(4, 2496) = 32.851$, $p < .00$. In order to check to what degree of objective setting the All-score differs, a Post Hoc analysis was conducted using the Bonferroni procedure. The results of this are shown in Table 1.

In Table 1 the All-score of the type of objective from the first column is compared with the All-score of the type of objective from the first row. The value that is shown in the table is the Mean Difference (MD). This MD was calculated by subtracting the average of the All-score of the type of objective in the first column from the average of the All-score of the type of objective in the first row. The significant differences from this column are marked with an asterisk.

Table 1. *Post Hoc analysis (Mean Differences) of the types of objectives affecting the All scores.*

	Very general	General	Neither general nor specific	Specific	Very specific
Very general	-	-2.83	-2.45	-5.97*	-13.98*
General		-	.38	-3.14*	-11.15*
Neither general / nor specific			-	-3.52*	-11.53*
Specific				-	- 8.01*
Very specific					-

$p < .05$.

It can be deduced from Table 1 that the average All-scores for the programs for which the objectives that were set are very general, general or neither general/nor specific are significantly lower than the average All-scores for programs for which the objectives are specific or very specific. It is striking that the average All-scores also differ significantly for programs in which the objectives that were set are specific and the programs in which the objectives that were set are very specific (MD=-8.01, $p<0.000$).

Involvement of Stakeholders. The results of the One-way ANOVA showed that there is a significant difference between the different stages of involvement, $F(3, 2742) = 3.080$, $p < .026$. In order to check in which stages the effectiveness indicator differs, a Post Hoc analysis was conducted using the Bonferroni procedure. The results of this are shown in Table 2.

Table 2. *Post Hoc analysis (Mean Differences) of stage of involvement affecting the All scores.*

	Preliminary stages	Training program	Both	Unknown
Preliminary stages	-	.713	.002	5.36*
Training program		-	-.711	4.65
Both			-	5.36*
Unknown				-

* $p < .05$.

Table 2 shows that those who were only involved in the preliminary stages are more positive about HRD effectiveness than are those of whom it is not known in which stage of the training process they were involved (MD = -5.36). This difference in average All-score is significant ($p < .025$). Those who were involved in the entire training process also assessed HRD effectiveness more positively than did those of whom it is not known in which stage of the training process they were involved (MD = -5.36). This difference too is significant ($p < .024$).

Subsequently, a one-way ANOVA analysis shows that there is a significant difference between the respondents when grouped on the basis of function $F(11, 2727) = 6.401$, $p < .00$. In order to check for which functions the average All-score differs significantly, a Post Hoc analysis was conducted using the Bonferroni procedure. Only the columns with significant results are shown in Table 3.

From Table 3 it can be deduced that the average All-score for the function of director/works manager is significantly lower than the average All-score for the head of the HRD department (MD = -5.4, p<0.000), the HRD officer (MD = -4.67, p<.000) and the HRD coordinator within the HRD department (MD = -5.07, p<.008). Other siginifant differences were found between at one side the line manager, the personnel officer, and the category others, and on the other side the head of the HRD department, HRD officer, and HRD coordinator. The second group has significantly higher All-scores, which imply far more positive perceptions of HRD interventions.

Table 3. *Post Hoc analysis (Mean Differences) of the type of functions affecting All scores.*

	Head HRD dept.	HRD officer	HRD coordinator	Other
Director	-5.40*	-4.67*	-5.07*	-1.15
Line manager	-5.75*	-5.03*	-5.43*	-1.51
Head of personnel	-4.59*	-3.86*	-4.26	-.34
Personnel officer	-4.54*	-3.84*	-4.22	-.30
Head HRD dept.	-	.73	.33	4.24*
HRD officer		-	-.40	3.52*
HRD coordinator			-	3.92
Teacher				2.39
Internal advisor				1.68
External advisor				1.28
Other				-
Member works counsil				

* $p < .05$.

Form of HRD programs. The mean and the standard deviation for both groups were calculated to investigate whether there is a difference between the group of students who received an in-company program and those who received an individual program. The All-score for in-company programs (M = 65.11, SD = 12.99) is lower than the All-score for individual programs (M = 66.35, SD = 14.95). The Independent Samples T-test, however, indicated that this difference is not significant, $t(2413) = -1.644$, $p < .10$.

Content field of HRD Programs. It was investigated whether there is also a difference in the average All-score between the different content fields of HRD. The One-way ANOVA analysis reveals that here too there is a significant difference, $F(11, 2734) = 4.836$, $p < .00$. In order to check for which fields of HRD the average All-score differs, a Post Hoc analysis was conducted using the Bonferroni procedure. Only the column with significant results are shown in Table 4.

From Table 4 it can be deduced that programs in the field of languages are found to be significantly more effective than programs in the fields of management (MD = 5.81, p<.000), communication (MD = 4.16, p<.003), commerce (MD = 6.66, p<.000), participation in decision-making (MD = 6.99, p<.000), management and communication (MD = 6.32, p<.017) and programs from the residual category 'other' (MD = 5.89, p<.000).

Conclusion and Discussion

The goal of this study was to gain a greater insight into characteristics that explain, or influence, HRD effectiveness. Firstly, the influence of setting or not setting objectives in advance was studied. Here it was expected that setting objectives in advance would have a positive influence on the All-score. At the same time, the setting of specific objectives was expected to lead to a higher All-score than the setting of general objectives. The results of the analysis correspond with these expectations.

Table 4. *Post Hoc analysis (Mean Differences) of the types of content fields affecting All scores.*

	Languages
Languages	-
Management	5.81*
Communication	4.16*
Commerce	6.66*
Marketing	7.25
Technology	4.74
Automation	9.49
HRD Theory	4.82
Participation in decision making	6.99*
Other	5.89*
Management & Communication	6.32*
Management & Commerce	1.51

$p < .05$.

Another characteristic examined in the study was the involvement of stakeholders in the HRD assignment. It was expected here that those who were involved only in the actual implementation of the HRD assignment would give a more positive assessment of HRD effectiveness than would the other people involved. The results indicate that respondents who were involved only in the preliminary stages of the program were more positive about HRD effectiveness than were those of whom it was not known in which stages of the training process they had been involved. The respondents who were involved both in the preliminary stages and in the program itself also gave a more positive assessment of HRD effectiveness than did those of whom it was not known in which stages of the training process they were involved. It is striking that no significant differences were found with the respondents who had been involved only in the program itself. This is probably due to the relatively small size of this group of respondents. A follow-up study in which more respondents from this group are involved may well produce significant results.

The function of the respondent was also considered, and here it was expected that there would be a difference in All-scores between the function categories distinguished, due to the different perspectives of those involved. Those who are directly involved in the programs will look mainly at the program itself, how it progressed and whether the learning objectives of the program were attained. Those who are not directly involved in the programs will look more at the effect of the program on the functioning of the participants. The results reveal that respondents who are directly involved in the programs, such as HRD officers, heads of HRD departments and HRD coordinators within HRD departments, are more positive about HRD effectiveness than are respondents who are not directly involved in programs, such as directors/works managers, line/departmental/divisional managers, heads of personnel, personnel officers and respondents from the category 'other'. This is in line with the result, found by Wognum (1999), indicating that HRD officers are more positive about the effects of HRD programs than other stakeholders. On the other hand, no significant differences were found with the group of respondents who were involved only in the program itself. This is probably due to the relatively small size of this group of respondents. A follow-up study in which more respondents from this group are involved may well produce significant differences.

Further, the form of the HRD program was examined. It was expected that in-company programs would be more effective than individual ones. The results, however, reveal that this is not the case: individual programs prove to be more effective than in-company programs. This corresponds with the results found by Wognum (2001a). The differences in the All-score are - although close to significance - not significant. It would therefore be advisable to carry out this study using a random sample with a higher percentage of individual programs. In the study presented here six times as many in-company programs were involved as individual programs.

Finally, the field to which the programs relate was examined; here there was expected to be a difference in All-score between the different fields, mainly because of the differences in the knowledge and skills to be acquired. The results reveal that there are indeed differences. Programs in the field of languages appear to be perceived as more effective than programs in the fields of management, communication, commerce, employee participation,

management and communication and programs from the residual category 'other'. This is probably due to the fact that the content of language programs is more concrete and more directly applicable than those of the other types of programs. One striking result is that both communication programs and commerce programs were found to be less effective than language programs, but that this was not the case in a combination of these programs. A possible explanation for this is that in this study there were fewer programs in the field of the combination of communication and commerce than programs in the individual fields.

The results of this study provided us with some more insights into characteristics that are able to enhance HRD effectiveness. Based on this, it is now possible to further fill out the HRD effectiveness model as depicted in earlier papers (Wognum, 2001b) with the predictor variables found.

In this study, T-tests and One-way ANOVAs were applied to assess the effect of the individual explaining variables separately. As a result, it is possible to draw conclusions as to whether or not they influence the AII-scores. However, all these variables are treated as if they were independent, and no second-order effects were taken into account. In our study this might not be the case, so further research is needed. In general, when a design consists of more than two dependent variables, a MANOVA study is conducted to gain more insight into the relations between the variables and the AII-score. Conducting a MANOVA will therefore be the next step in our research project.

References

Broad, M.L. (1997). Overview of transfer of training: A review and directions for future research. *Personnel Psychology*, 41(1), 63-105.

Garavan, T. (1991). Strategic Human Resource Development. *Journal of European Industrial Training, 15*(1), 17-30.

Garavan, T.N., Costine, P., & Heraty, N. (1995). The emergence of strategic human development. *Journal of European Industrial Training*. 19 (10), 4-10.

Holton, E.F. (2000). Clarifying and defining the performance paradigm of human resource development. K.P. Kutchinke, *2000 Conference Proceedings*, March 8-12, Raleigh-Durham, North Carolina. 2-3.

Kaplan, R.S. and Norton, D.P. (1996). *The balanced scorecard*. Boston: Harvard Business School Press.

Little, R.J.A., & Rubin, D.B. (1987). *Statistical analysis with missing data*. New York: Wiley.

Mulder, M., K. van Ginkel, and Nijhof, W.J. (1994). Customer satisfaction research as a component of quality assurance within in-company training. *Tijdschrift voor Onderwijswetenschappen. [Journal of Educational Sciences.]. 24*(2/3), 59-76.

Mulder, M. (s.a.). *Independent quality assessment of training*. Unpublished paper.

Mulder, M. (2000). *Competentieontwikkeling in bedrijf en onderwijs*.[Competence development in companies and schools.]. http://www.wau.nl/pers/00/mulder00.doc.

Peters, E. (2001). Rendement van opleidingen: wel degelijk meetbaar. [Returns of HRD investments: indeed measurable.]. *Leren in ontwikkeling, [learning in development], 7-8*, 14-17.

Phillips, J.J. (1997). *Handbook of training evaluation and measurement methods* (3e ed.). Houston: Gulf Publishing Company.

Scheerens, J. & Bosker, R. (1997). *The foundations of educational effectiveness*. Oxford: Pergamom.

Van Buren, van M.E. (2001). *State of the Industry Report 2001*. Alexandria (Va): ASTD:

Van der Linden, W.J. & Hambleton, R.K. (1997). *Handbook of modern Item Response Theory*. New York: Springer Verlag.

Weinberger, L.A. (1998). Commonly held theories of human resource development. *Human Resource Development International, 1*, 75-93.

Wognum, A.A.M. (1994). Assessing HRD effectiveness from a strategic point of view. *Tijdschrift voor Onderwijswetenschappen*, 24(2/3), 77-89.

Wognum, A.A.M. (2001a). Does HRD Effectiveness Vary for Organization and HRD Related Factors? *Performance improvement quarterly*. 14(3).

Wognum, 2001b (AHRD paper) Improving performance through HRD: towards a multi level model. Aliega, O.A. (Ed.) AHRD 2001 Conference Proceedings. February 28 – March, 4, 2001. Tulsa, Oklahoma. 727-734.

Wognum, A.A.M. (1999). *Strategische afstemming en de effectiviteit van bedrijfsopleidingen*. [Strategic HRD Aligning and HRD Effectiveness]. Enschede: Twente University Press.

Wognum, A.A.M. & Lam, J.F. (2000). Stakeholder involvement in strategic HRD aligning: the impact on HRD effectiveness. *International Journal of Training and Development, 4*(2), 98-110.

Wognum, A.A.M. & Mulder, M. (1999). Strategic HRD within companies. *International Joumal of Training and Development, 3*(1), 2-13.

Expanding the Transfer of Training Domain of Structured On-the-Job Training

Chan Lee
Jin Hyuk Kim
The Ohio State University

Ronald L. Jacobs
The Ohio State University

Many researchers and practitioners in human resource development (HRD) field presumed there was a close match between structured on-the-job training (OJT) and the actual task on the job, but structured OJT has not been researched in depth in the far transfer of training. Thus, this paper proposes that structured OJT can be used not only in near transfer of training but also in far transfer of training. Yet how to design structured OJT programs to achieve far transfer, especially when the task is relatively unknown, remains an issue for future HRD research and development.

Keywords: Transfer of Training, On-the-Job Training, Planned Job Training

Transfer of training continues to be an area of major interest among human resource development (HRD) scholars and practitioners. Underlying the concerns about training costs is the fundamental organizational need to ensure that trainees will be able to use what was learned during the training back on their jobs. Bassi, Gallagher, and Schroer (1996) state that employers express concerns about their training expenditures. In the authors' study, private sector employers spent $25.2 billion on direct costs associated with training, while private employers' indirect training costs (wages, salaries, and fringe benefits) are estimated to be $27.1 billion. Comparable estimates of federal government agencies' expenditures on direct and indirect costs for training civilian government employees are $1.2 billion and $1.8 billion, respectively. Adding the estimates in these two sectors together indicates employers have spent $26.4 billion on direct costs and $28.9 billion on indirect costs for training in 1995, bringing the total to $55.3 billion.

While there has been much attention paid to the transfer of training in general, how the topic relates to structured on-the-job training (OJT) has received little attention, if any. Many researchers have simply presumed that since there was a close match between the training and the task, transfer of training was not a particular issue of concern (Jacobs & Jones, 1995). However, upon closer examination, it has been generally assumed that structured on-the-job training has been used to achieve near transfer of training situations only. This viewing of structured on-the-job training implies that transfer of the training has been restricted within the application of the types of tasks and in the setting prescribed by the training. An important issue here, and one that has received little attention in the HRD literature is the extent that training in one domain may generalize to a different or unintended context.
This paper proposes that structured on-the-job training (OJT) can be used in both *near* and *far* transfer of training situations; it consists of three parts. The first part discusses transfer of training, focusing on near and far transfer. The second part discusses the transfer of training domain of structured OJT. The final part discusses implications related to far transfer of training and structured OJT.

Near Transfer Versus Far Transfer of Training

Transfer of training refers to the extent to which individuals can apply what was learned in one situation to another situation (Baldwin & Ford, 1988; Holton, Bates, Seyler & Carvalho, 1997). Transfer of training involves applying the task to contexts other than those used in the training setting. Trainers expect the trainee to learn the new behaviors and use them back on the job. The literature suggests that the extent to which transfer of training occurs depends on several sets of variables. For instance, Baldwin and Ford (1988) proposed a framework that identified the variables in the training design (principles of learning, the sequencing of training material, and the job relevance of the training content), the trainee characteristics (ability or skill, motivation, and personality), and the work environment characteristics (supervisory; constraints and opportunities to practice learned material on the job).

Copyright © 2002 Chan Lee, Jin Hyuk Kim and Ronald L. Jacobs

As Figure 1 shows, the greatest importance in determining the transfer of training is the relative match between the training setting and the work setting (Jacobs & Jones, 1995). That is, the principle states that the greater the similarity between the two settings, the greater likelihood the transfer of training will occur. The training setting should have the same critical features, including the physical attributes, the various work-related cues, and social settings that will be encountered later on in the actual work setting. Some of these features might be deduced to their simplest forms with the expectation that the training can focus on these alone, with the elimination of extraneous information. However, the extent to which the match exists, and by extension, the extent to which transfer of training occurs depends in part on the nature of the work and the expected training outcomes.

Transfer of training can be categorized in several ways. For example, Royer (1979) identified some bi-polar transfer of training classifications, such as lateral and vertical, specific and non-specific, literal and figural, and near and far dimensions. Royer (1979) emphasized viewing those various constructs on a continuum rather than two distinct phenomena. As shown in Figure 2, near and far transfer of training can be compared in terms of the relationship between the work task and emphasis of training design. Near transfer requires a close match between training and task content, a close match between the training and task outcomes, and emphasis on specific concepts and skills. In contrast, far transfer requires an approximate match between training and task content, and an approximate match between training and task outcomes, and emphasis on general concepts and skills.

The characteristics of near transfer suggest trainees should apply known sets of knowledge and skills. For example, after an employee learns the repair procedures for a Hyundai engine, they repair only that one particular Hyundai engine once they are back on the job. Far transfer, on the other hand, is akin to having trainees learn more general concepts and principles, which might be applied to a wider set of contexts than those necessarily presented in the training setting. For example, an employee might learn to repair a Hyundai engine, but for far transfer to occur, the trainee would be able to transfer what was learned about engines in general during training to an array of other engines, such as Chrysler, Ford, or Honda. Far transfer suggests by learning the fundamental aspects of something along with specific skills, there is a greater chance for applying that information to more than one setting later on. Thus, the greater similarity between the training and working settings suggests relatively near transfer of training. Less similarity suggests the need for far transfer.

The concepts of near and far transfer of training are frequently discussed relative to training objectives, transfer theory, and learning requirements. In terms of the training objectives, the distinction between the types of transfer is related to types of skills transferred (Clark & Voogel, 1985). Clark and Voogel (1985) distinguished between procedural learning objectives, in which concrete and practical knowledge of relatively simple routines are included, such as something that can be learned as a step-by-step sequence of behaviors and a declarative learning objective, in which concepts and principles have formal properties. Procedural types of training objectives tend to involve near transfer while declarative training objectives are more likely to contribute to far transfer.

In terms of transfer theory, the literature has focused on two kinds of transfer of training theories. For example, Goldstein (1993) describes two transfer theories necessary for explaining near and far transfer: the identical-elements and principles theories. The identical elements theory suggests that the transfer of training occur when what is being acquired during the training is identical to what the trainee performs on the actual context. According to the theories, transfer will be maximized to the extent to which the tasks, equipment, tools, and environment at the training setting are similar to those encountered at the actual work setting. In contrast, the transfer-through-principle theory proposes that the general principles necessary to learn a task should be emphasized to solve the problems in the transfer task. Regarding designing training environment, this theory is not highly concerned with similarity between the training setting and the actual work setting. Therefore, near transfer enables trainees to meet the relatively known predictable conditions of their job and apply their knowledge and skills, while in far transfer, the trainees are expected to learn concepts and principles to deal with situations not always encountered during the training.

Finally, research suggests that near and far transfer of training requires different learning requirements. The requirements for near transfer depend mostly on the similarity between the training and the task. However, achieving far transfer of training requires additional considerations. Laker (1990) states far transfer depends on whether the training includes information about the assumptions underlying the skills and behaviors they are learning. In addition, a number of studies have suggested that the more trainees practice in different contexts and use novelty in their practice exercises, the more effective the far transfer (Ellis, 1965; Goldstein, 1986; Baldwin & Ford, 1988). Clark and Voogel (1985) stress the importance of incorporating a variety of situations and problems in order to develop and apply skills.

Structured OJT and Transfer of Training

On-the-job training refers to a form of training that occurs at the workplace during the performance of a job rather than in a classroom setting (Jacobs & Jones, 1995; Rothwell & Kazanas, 1994). OJT is the most widely used method of delivering training to a novice employee by an experienced employee today, and is one of the most important components of learning in the workplace (Jacobs, 1999; Rothwell & Kazanas, 1990). Despite its frequency of use, most OJT is unfortunately informal or unstructured in nature, and therefore has received serious criticism for often being haphazard, incomplete, and unpredictable (Jacobs, 1990; Jacobs & Jones, 1995; Rothwell & Kazanas, 1994). Structured OJT has recently emerged as a subject of interest in the HRD field. In contrast to informal or unstructured OJT, structured OJT uses a planned approach to the training (Jacobs & Jones, 1995). Structured OJT is generally referred to as a planned process conducted by an experienced employee for the purpose of providing the knowledge and skills to perform tasks to a novice employee at or near the workplace.

When there is a greater match between training setting and job setting, then trainees can transfer what they have acquired to the job more successfully. Structured OJT has been perceived as an effective training approach in part because of its potential to achieve transfer of training. It is one of the benefits of structured OJT that trainees have much more possibility for transfer than classroom training (Jacobs & Jones, 1995). Since structured OJT is conducted near or at the job setting, trainees are available to use the same equipment, tools, and environment they use to perform their actual tasks. Structured OJT enables trainees to practice the task during training because the task is similar in both training and transfer. Because of the inherent association between structured OJT and the feature of transfer, it is commonly believed by managers and HRD professionals that structured OJT should only be used in near transfer of training situations.

Figure 3 presents how structured OJT differs by the nature of the task – established or varying – and near or far type of transfer of training. The figure also shows examples of these dimensions. The classifications between near and far transfer and established and varying tasks provide an approach to the transfer of training domain of structured OJT. The established and varying classification provides a complementary dimension to near and far transfer. While the near and far transfer is a classification about the conditions under which training and transfer tasks are performed, the established and varying task is a classification about the nature of the tasks themselves. Established tasks involve the specific procedural training content and sequence. In contrast, varying tasks involve the complexity of general information in training content and sequence. The combination of a near or far type of transfer and the established or varying tasks can provide a means of characterizing transfer of tasks on structured OJT.

Established tasks and near transfer of training (ex. 1, Figure 3) have characterized most structured OJT programs. In this instance, the training focuses on units of work in which the content and sequence are fixed so that the trainee is expected to perform closely matching job tasks. Established tasks and far transfer (ex. 2) focuses on units of work in which the content and sequence are fixed, but the trainee is expected to perform across a set of related tasks. In this example, the training focuses more on having trainees learn reliable principles that govern relationships among variables. This combination should attract most attention from organization managers since far transfer would seemingly reduce the amount of training early on.

The combination of having varying tasks and near transfer (ex. 3) suggests that the training focuses on units of work in which the content and sequence are changeable, for the purpose of performing closely matching job tasks. At first glance, how to achieve such a combination might appear illogical, but it points to situations where training is provided for complex, constantly changing work situations.

Finally, in considering varying tasks and far transfer (ex. 4), the training focuses on units of work in which the content and sequence are changeable to perform a set of related job tasks. In the far transfer and varying task training provides broad principles, often drawn from the underlying structure of the task. This broad base can be transferred in more than one task situation. Given these combinations, it becomes necessary to present a level of transfer, which focuses more on general principles and concepts, followed by embedding of suitable training objectives and content for the desired level of transfer.

Discussion

This paper proposes that structured OJT can be used for both near and far transfer of training. Several issues

determine whether structured OJT can actually be used for far transfer. First, to achieve far transfer, structured OJT should be considered as a system such that the training inputs, training process, training outputs, and organizational context are considered. Even though it may be believed that training outcomes from far transfer are less predictable, using the systems view to implement structured OJT would enhance the possibility for the most effective training outcomes.

Second, a structured OJT program is viewed as an investment from which the organization can expect a return (Jacobs & Jones, 1995). When an organization needs principle-focused training to apply to multiple job issues or when training workforce in a broader perspective, for example in a nation, is needed, structured OJT used in far transfer would be a cost-effective approach. Integrating the principle into structured OJT can achieve job outcomes in both near transfer and enhance the potential far transfer.

Third, Versloot and De Jong (1994) and De Jong (1991) propose forms of structured OJT that possess varying levels of structuring and include on-site practice, on-site instruction, and on-site study. In certain circumstances it can be better to structure less, than to structure too extensively (De Jong, 1991; Versloot & De Jong, 1994). Regarding this issue, less structured formation could be appropriate for far transfer of structured OJT.

Fourth, Lohman (2001) indicates that structured OJT might be used for both deductive and inductive training strategies. Inductive training strategies seem more appropriate for far transfer of structured OJT. It requires trainees to become critical thinkers, effective problem solvers, and independent learners, skills that enable them to continuously learn and improve their performance instead of receiving information from the trainer.

Finally, to achieve successful far transfer, trainees can be encouraged to discuss and apply the training in a context they choose. When trainees participate in the program design, the training would be expected to have a closer match between the employee's interests and the organizational needs. This approach might enable trainees to better meet current and future organizational needs.

Transfer of training is one of the primary concerns for managers and HRD professionals. Although structured OJT is now widely used as an effective training method, it has been used within a limited domain of near transfer of training. This paper sought to explore the transfer of training domain of structured OJT to include far transfer. Further research and experience are required to further examine the various issues related to designing structured OJT for far transfer of training.

References

Baldwin, T. T. & Ford, J. K. (1988). Transfer of training: A review and directions for future research. *Personnel Psychology, 41* (1). 63-105.

Bassi, L. J., Gallagher, A. L., & Schroer, E. (1996). *The ASTD training data book: Training statistics, structure & operations, technology use, supplier issues, performance improvement.* Alexandria, VA: ASTD

Clark, R. E. & Voogel, A. (1985). Transfer of training principles for instructional design. *Educational Communication and Technology, 33* (2). 113-125.

De Jong, J. A. (1991). The multiple forms of on-site training. *Human Resource Development Quarterly, 2* (4). 307-317.

Ellis, H. C. (1965). *The transfer of learning*. New York: Macmillan.

Goldstein, I. L. (1986). *Training in organizations: Needs assessment, development, and evaluation*. Monterey, CA: Brooks/Cole.

Goldstein, I. L. (1993). *Training in organizations: Needs assessment, development, and evaluation*. Pacific Grove, CA: Brooks/Cole.

Holton, E. F., III, Bates, R. A., Seyler, D. L. & Carvalho, M. B. (1997). Toward construct validation of a transfer climate instrument. *Human Resource Development Quarterly, 8* (2), 95-113.

Jacobs, R. L. (1990). *Structured on-the-job training*. Columbus: Ohio State University. (ERIC Document Reproduction Service No. ED 326 641)

Jacobs, R. L. (1999). Structured on-the-job training. In Harold D. Stolovitch & Erica J. Keeps (Eds.), *Handbook of Human Performance Technology* (2nd ed., pp. 606-625). San Francisco, CA: Jossey-Bass/ Pfeiffer.

Jacobs, R. L. & Jones, M. J. (1995). *Structured on-the-job training: Unleashing employee expertise in the workplace*. San Francisco, CA: Berrett-Koehler.

Kim, J. H. & Lee, C. (2001). Implications of near and far transfer of training on structured on-the-job training. *Advances in Developing Human Resources, 3* (4), 442-451.

Laker, D. R. (1990). Dual dimensionality of training transfer. *Human Resource Development Quarterly, 1* (3), 209-

223.
Lohman, M. C. (2001). Deductive and inductive on-the-job training strategy. *Advances in Developing Human Resources, 3* (4), 435-441.
Rothwell, W. J. & Kazanas, H. C. (1990). Structured on-the-job training (SOJT) as perceived by HRD professional. *Performance Improvement Quarterly, 3* (3), 12-26.
Rothwell, W. J. & Kazanas, H. C. (1994). *Improving on-the-job training: How to establish and operate a comprehensive OJT program.* San Francisco: Jossey-Bass.
Royer, J. M. (1979). Theories of the transfer of learning. *Educational Psychologist, 14*, 53-69.
Versloot, A. M. & De Jong, J. A. (1994, June). *Organizational context of structured on-the-job training*. Paper presented at the International Research Network for Training and Development Conference, Milan, Italy. (ERIC Document Reproduction Service NO. ED 377 323)

Figure 1. Potentiality of Transfer of Training Based on the Relative Match (Source: Based on Jacobs & Jones, 1995, p. 36.)

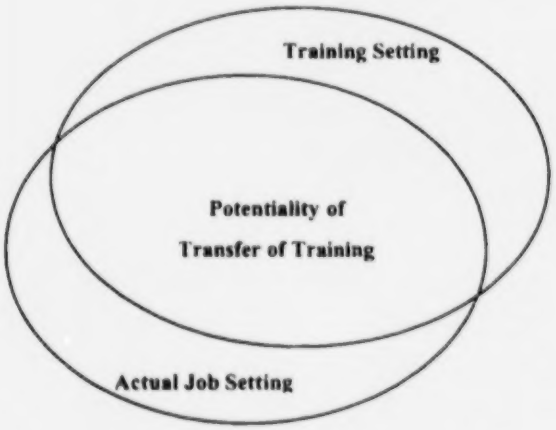

Figure 2. Comparing Near and Far Transfer of Training (Source: Kim & Lee, 2001, p. 445.)

	Near Transfer	**Far Transfer**
Relationship between the training content and work task	Close match such that the training content and outcomes relate to one work task.	Approximate match such that the training content and outcomes relate to a set of related work tasks.
Training design	• Specific concepts • Procedures • Problem solving • Decision making	• General concepts • Broad principles • Problem solving rules • Decision making rules

BEST COPY AVAILABLE

Figure 3. Comparing Types of Tasks and Transfer of Training (Source: Kim & Lee, 2001, p. 448.)

	Near Transfer	**Far Transfer**
Established Task	**ex 1.** Training focuses on units of work in which the content and sequence are fixed, to perform closely matching job tasks. • Installing tires in a car	**ex 2.** Training focuses on units of work in which the content and sequence are fixed, to perform related job tasks. • Learning Microsoft Word and apply the conceptual understanding and skills to WordPerfect
Varying Task	**ex 3.** Training focuses on units of work in which the content and sequence are changeable, to perform closely matching job tasks. • Determining customers' insurance needs	**ex 4.** Training focuses on units of work in which the content and sequence are changeable, to perform related job tasks. • Learning principles of a discussion and then apply them to the understanding of facilitating team meetings

BEST COPY AVAILABLE

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

REPRODUCTION RELEASE

(Specific Document)

I. DOCUMENT IDENTIFICATION:

Title: 2002 AHRD Conference Proceedings	
Author(s): Toby marshall Egan & Susan A. Lynham	
Corporate Source: Academy of Human Resource Development	Publication Date: February 2002

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, *Resources in Education* (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to all Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

Level 1

☒

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) and paper copy.

The sample sticker shown below will be affixed to all Level 2A documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2A

Level 2A

☐

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only

The sample sticker shown below will be affixed to all Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Sample

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

2B

Level 2B

☐

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only

Documents will be processed as indicated provided reproduction quality permits.
If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Sign here, → please

Signature: Kathryn S. Egan

Printed Name/Position/Title:

Organization/Address:
Academy of Human Resource Development
College of Technology
Bowling Green State University
Bowling Green, OH 43403-0301

Telephone: 419.372.9155 FAX: 419.372.8385

E-Mail Address: office@ahrd.org Date: 2-29-03

(over)

09/12/2003 08:27 FAX 6142821260 OSU CTR EDUC & TRNG EMPL 002

III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, *or*, if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

Publisher/Distributor:
Address:
Price:

IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

Name:
Address:

V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

Acquisitions Coordinator
ERIC Clearinghouse on Adult, Career, and Vocational Education
Center on Education and Training for Employment
1900 Kenny Road
Columbus, OH 43210-1090

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

09/12/2003 08:27 FAX 6142921260 OSU CTR EDUC & TRNG EMPL 003